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INSTRUCTIONAL TECHNOLOGY AND MEDIA PROJECT, SECOND ADVISORY PANEL MEETING APRIL 24, 25, AND 26, 1964 CHERRY HILL, NEW JERSEY, SUPPORTING PAPERS.

BY- TORKELSON, GERALD
UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES

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A SECOND ADVISORY PANEL MEETING OF THE INSTRUCTIONAL TECHNOLOGY AND MEDIA PROJECT (ITM) WAS HELD ON APRIL 24, 25, AND 26, 1964, AT CHERRY HILL, N.J. VARIOUS REPORTS WERE GIVEN INCLUDING--(1) ITM PROJECT HOUSING REPORT, (2) 12 CONFERENCE AND MEETING REPORTS, (3) A STATUS REPORT ON ITM'S INFORMATION STORAGE AND RETRIEVAL SYSTEM, AND (4) A REPORT ON THE PUBLICATIONS PROGRAM OF THE EDUCATIONAL MEDIA BRANCH. DR. WILLIAM ALLEN, EDITORIAL DIRECTOR OF ITM, PRESENTED THE LATTER REPORT. ALLEN EXPLAINED THAT, ALTHOUGH THIS ACTIVITY EXPANDS ON THE DESIGNATED RESPONSIBILITY OF THE MONOGRAPH PREPARATION PHASE OF THE ITM PROJECT, IT SEEMED DESIRABLE TO PLACE THE MONOGRAPHS WITHIN PUBLICATIONS PROGRAM. FIVE TYPES OF DISSEMINATING ACTIVITIES AND FIVE AUDIENCE GROUPS WERE USED TO ILLUSTRATE THE IMPORTANCE OF PUBLICATIONS. REMEDIES TO CORRECT DEFICIENCIES IN REPORTING TO USERS WERE SUGGESTED. (JC)

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ITM

INSTRUCTIONAL TECHNOLOGY AND MEDIA PROJECT

ED003810

SECOND ADVISORY PANEL MEETING

April 24, 25 and 26, 1964

Cherry Hill, New Jersey

SUPPORTING PAPERS

Gerald Torkelson

School of Education
University of
Southern California
Los Angeles,
California 90007

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ITM Project Housing Report

At the time the Instructional Technology and Media Project was approved, the Project Director requested additional space at the University of Southern California to carry on the activities of the Project. The Project has been housed in the second story of a dwelling unit at 924 W. 37th Street on the campus.

In anticipation of other facilities of a larger nature becoming available in the near future, the Project has remained and is still at its original location. However, recent requests on the part of the Project Director appear to have fallen on a receptive ear and plans are currently underway to move the Project to a new location, 1023 35th Place.

To properly understand the housing problem, a few facts and figures are helpful.

1. The current facility contains 492 sq. ft. of usable space - the facility to be contains 1488 sq. ft. of usable space.

2. The current facility has rooms for 6 persons in a crowded situation with little or no privacy. The new facility will house 11 persons, if needed, with some privacy.

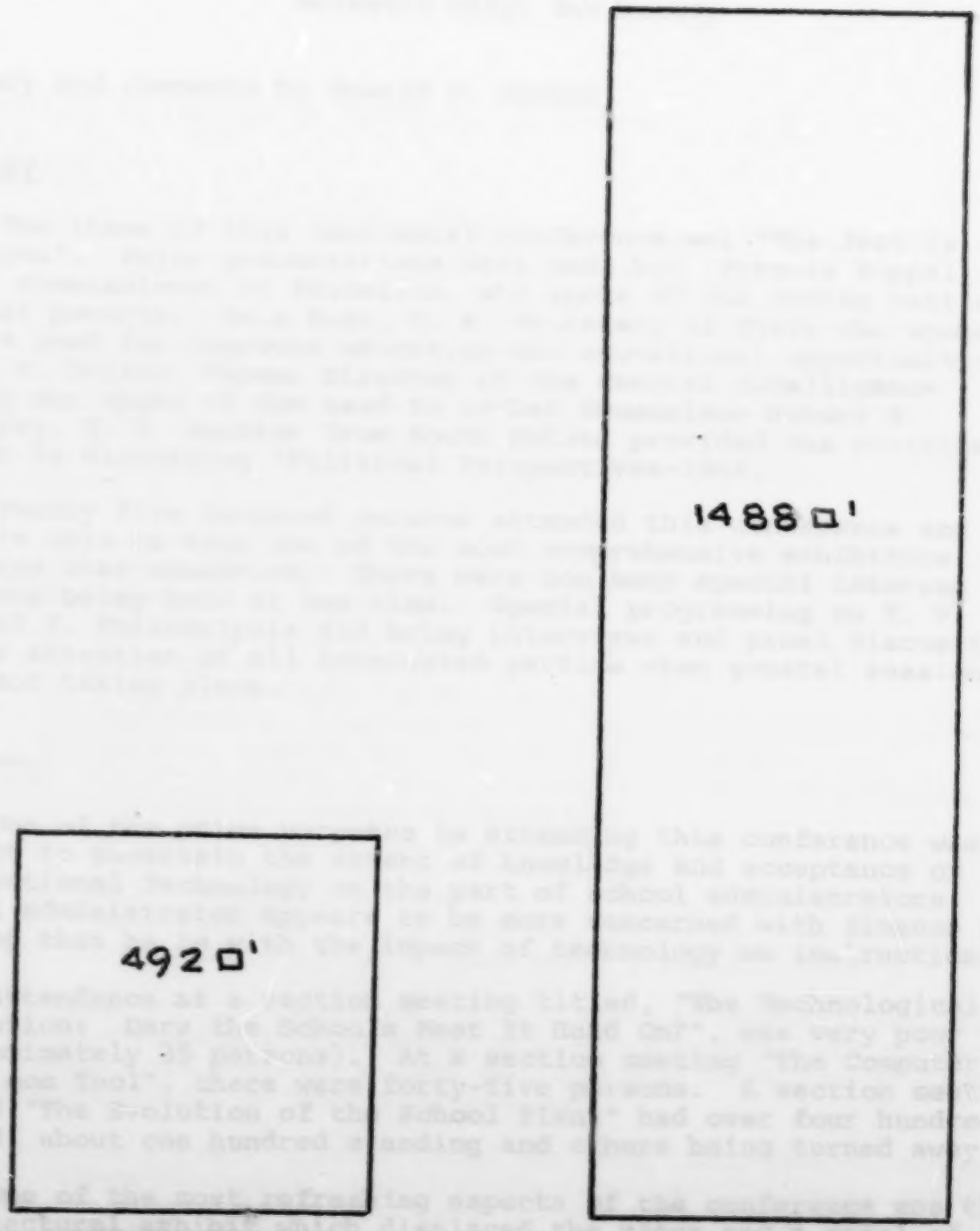
3. Current facility has no room for storage of Information - new facility will permit an area to be set aside for ISR activities.

4. Current facility is geographically removed from Instructional Technology Department - new facility is within a few doors of IT Lab.

5. Current facility does not have room for Research assistants to work (they work at library or at home) - new facility has space for all project personnel.

In addition to the above, a small house in the rear of the facility to be is to to be occupied by the Cinema Research Group, solving a space problem which had developed in this area.

Final approval for the move has not been received at the time of this writing, but it is hoped that the move will be made upon our return from this meeting.



ITM SPACE COMPARISON

American Association of School Administrators

Centennial Conference
February 14-19, 1964
Atlantic City, New Jersey

Summary and comments by Donald P. Rucker

SUMMARY

The theme of this centennial conference was "The Past is Prologue". Major presentations were made by: Francis Keppel, U. S. Commissioner of Education, who spoke of the coming battle against poverty; Dean Rusk, U. S. Secretary of State who spoke of the need for improved education and educational opportunity: Allen W. Dulles, former Director of the Central Intelligence Agency who spoke of the need to combat Communism; Hubert H. Humphrey, U. S. Senator from South Dakota provided the political flavor in discussing "Political Perspectives-1964.

Twenty five thousand persons attended this conference and we were able to view one of the most comprehensive exhibitors displays ever assembled. There were too many special interest sessions being held at one time. Special programming on T. V. Channel 2, Philadelphia did bring interviews and panel discussions to the attention of all interested parties when general sessions were not taking place.

COMMENTS

One of the prime purposes in attending this conference was to attempt to ascertain the extent of knowledge and acceptance of Instructional Technology on the part of school administrators. The school administrator appears to be more concerned with finance and housing than he is with the impact of technology on instruction.

Attendance at a section meeting titled, "The Technological Revolution: Dare the Schools Meet It Head On?", was very poor (approximately 35 persons). At a section meeting "The Computer as a Classroom Tool", there were forty-five persons. A section meeting titled "The Evolution of the School Plant" had over four hundred seated, about one hundred standing and others being turned away.

One of the most refreshing aspects of the conference was the architectural exhibit which displayed the plans and a model of the Lewis and Clark Elementary School in St. Louis. This school, designed by Shaver in the form of a snail reflects a sincere look to the future through the incorporation of space and equipment to meet the challenges of our changing society.

AMERICAN DOCUMENTATION INSTITUTE
26th Annual Meeting
October 6-11, 1963
Chicago, Illinois

Summary and comments by Boyd M. Bolvin, Project Librarian

SUMMARY

"Automation and Scientific Communication" was the theme for the 26th Annual Meeting of the American Documentation Institute.

This meeting dealt with the problems of the complete cycle of communication in science, technology, law, and management, extending from the incident of generation of information to that of the utilization of such information. Critical reviews and discussions of current operational and experimental systems and procedures involving automation were conducted in an attempt to arrive at a better understanding of the significance and relative merits of a diversified set of activities.

For the purposes of the meeting, the aspects of automation were grouped into a number of topics, representing substantially the major functions within the communication cycle. These topics were:

1. Generation of Information
2. Recording of Information
3. Primary Distribution of Information
4. Symbolization, Transformation and Translation of Scientific Information
5. Analysis, Indexing and Correlation of Information
6. Machine Programs, Languages and Coding for Literary Processing
7. Secondary Distribution of Information
8. Information Storage and Retrieval
9. Document Storage, Retrieval and Display
10. Utilization of Information
11. Information Centers, Services and Networks
12. Information Science, Education and Professional Aspects

Besides the above theme session topics, a number of discussion seminars were held. These seminars (which seemed to be mainly concerned with the problems of indexing and retrieval) allowed small groups of specialists to discuss topics outside of the theme of the meetings.

In addition a number of author forums were held. These provided an opportunity for intimate discussions by small groups on subjects for which a particular author is a specialist. Also, users' information exchange sessions were held at various times giving users of established systems or types of equipment an opportunity to discuss their experiences and problems.

COMMENTS

Although the general theme sessions were interesting and informative for the most part, I felt that the author forums, users' information exchange sessions, and discussion seminars were more valuable. This was mainly due to the fact that these groups were small enough to provide for nearly maximum interaction between the authors, group leaders, etc., and those in attendance. After each paper was presented at the theme sessions, there was some time for questions and comments, but with 671 in attendance there was little opportunity for interaction among the participants.

A number of commercial organizations exhibited their materials and equipment at the conference. Although relatively few in number (for a national conference) I thought the exhibits were quite good. I was especially interested in the Termatrex and Recordak exhibits; the latter in light of its possible later extension to the Termatrex System we are interested in utilizing in our project's information system. The Termatrex (peek-a-boo) System provides the user with the "addresses" (serial numbers) of the documents; when it is connected to a Recordak microfilm reader-printer, the user would have instantaneous access to readable filmed abstracts of the documents as well as printouts if he so desired. Another highly interesting exhibit was the MIRACODE (Microfilm Information Retrieval Access CODE). With this new system, it is possible to retrieve any one of more than 900,000 pages of information in less than 15 seconds. The Recordak people claim that many information retrieval problems now being solved by computers could easily be accomplished by the logic selection and file-browsing capabilities of the MIRACODE System.

Another worthwhile feature of the conference, in my opinion, was the scheduling of special sessions during which commercial and institutional organizations were able to discuss their respective systems, products, equipment, and applications.

Since indexing and classification of documents are so important in information retrieval, I concentrated my time as much as possible in this area. A number of the discussion sessions dealt with the development of various indexes and thesauri. Specific problems discussed were: (1) cost of preparation vs. value; (2) hierarchical vs. alphabetical arrangement; (3) specificity of terms; (4) number of practical levels; and (5) the advantages and disadvantages of the various indexes.

4th ARMED FORCES TELEVISION CONFERENCE
October 23-26, 1963
Lowry Air Force Base

Summary Report by Joseph J. Del Rosso

Speakers

Presentations were made by William Harley, Joseph Kanner, Col. Wilfred Wagner, Cdr. James Parody, Capt. John Haney, Charles Hersh, Robert Spalding, L. P. Greenhill, Ernest Frankel, Clifford Erickson, Maj. Howard Hitchens, Jr., and others.

Some Generalizations

Television is used in the education and training of personnel in virtually every branch of the Armed Services in various forms and in varying degrees.

Television is used to observe missile launches, aircraft landings and takeoffs, aircraft carrier operations, men under test conditions and the many conventional uses with which we are all familiar.

Television can be justified on various grounds, but the strongest is economical.

A videotape recorder is an essential part of an ETV system and should be included in the planning at the beginning.

There is a lack of well-trained and qualified ETV personnel. There seems to be few places that train such people.

TV is being used successfully as management tool, saving many man-hours and dollars.

Some Specifics

1. Erickson on selection and training of the TV instructor:
   (a) teacher should have successful classroom teaching experience, high scholarship, ability to communicate in words and symbols, personal emotional maturity, ability to work in a team situation, ability to plan ahead, and factor X - human warmth, inspiration, etc.

2. Harley on the hope of ETV: if used with creativeness, understanding, and ability, it can be a weapon for peace.

3. Cdr. Parody on TV in naval operations: it is used on carriers to evaluate landings, takeoffs, accident analysis, etc. There are 15 such systems in use now. Ten more are planned, four of which will be land-based.

4. Greenhill on cost analysis: ETV can be justified because (a) it is less expensive and/or it saves money in the long run, (b) provides better instruction, (c) it saves time of both students and instructors, and (d) there is no other way it can be done.

5. Kanner on ETV and programed instruction: ETV should not be contaminated with PI. The PI people have made many sweeping statements--now they must start facing them squarely. PI is, for the most part, bunk, and ETV should have nothing to do with it.

My Remarks

Generally the conference was interesting and useful for both the novice and the more sophisticated. I was particularly impressed with the wide use of ETV in the several branches of the Armed Forces; the various kinds of ETV being used, i.e., large multi-system teaching, teacher-centered chains, observation systems and the like; the extensive installation and heavy use at Lowry in the teaching and training of airmen; the Air Force Academy tour; and with the many new people whom I met. I am greatly improved as a result--my eyes look like TV receives now--the horizontal hold goes out after being at the 901 club too long.

AVEAC CONFERENCE
January 30-February 1, 1964
Berkeley, California

Summary Report by Bernard R. Kantor

The Audio Visual Education Association of California held its annual conference in Berkeley, California, January 30 through February 1, 1964.

Many of the papers and demonstrations were quite interesting. The dinner speaker's 2 by 2 multiple slide dimmer or dissolver was interesting, attention getting, although I question the educational value of it, other than the attention getting factor. It could probably be done on motion picture film with better results.

Max Rafferty's talk on Saturday was fascinating.

Perhaps the best function of the conference, from the point of view of the ITM project, film production phase, was the opportunity to speak to educators and try out ideas on them, people like Hall, Runner, Phil Lewis, Eboch, Harcleroad and many others.

It was also valuable to speak to the various film distributors and get their ideas about problems in disseminating information on the newer media via film, and the problems of distribution of such films.

From my point of view, the informal talks were the real payoff and the real worth of the conference.

AVEAC Conference
January 30-February 1, 1964
Berkeley, California

Summary and commentary - Donald P. Rucker

SUMMARY

The theme of the conference was "Creativity Through Instructional Media." Major addresses included: "Creativity and the Role of Audio-Visual Personnel" by James Brown, Dean, Graduate Studies, San Jose State College; Instructional Technology and Quality Education" by Phil Lewis, Director of Research, Development and Special Projects, Board of Education, City of Chicago; "Successful Team Teaching," by Harry Becker, Superintendent of Schools, Norwalk, Connecticut; Use of Communications Media by NASA" by a team representing NASA; Emerging Instructional Systems" by Richard Lewis and Jerrold Kemp of the Audio-Visual Service Center, San Jose State College.

The exhibits were excellent and provided one with the opportunity to view many of the newer pieces of equipment which are available.

COMMENTS

One of the best presentations was by the NASA team which incorporated a multi-media approach to explain the M-2 (flying bathtub) Project. This type of presentation reflects the sophistication which can be achieved when time and money are available to provide adequate preparation. The "Emerging Instructional Systems" presentation by the San Jose group was also very well done.

Small group meetings which I attended seemed to concern themselves with irrelevancy. Some of these discussions, although not billed as such, turned to such topics as: How to limit the use of films; How to make teachers aware of the cost of audio-visual equipment and how to insure low maintenance costs by prohibiting student use of equipment and making the teacher financially responsible. Although these discussions were not generally the case, the fact that they did take place is disturbing.

Information regarding new equipment developments has been filed in proper category in the Project Equipment file.

Fall Joint Computer Conference -- 1963
Las Vegas Convention Center
Las Vegas, Nevada
November 12-14, 1963

Comment and Summary by Boyd M. Bolvin, Project Librarian

Comments:

Although this was a three-day conference, I only attended the meetings on Wednesday, November 13, as the purpose of my attendance was to gain information concerning currently operating Information Retrieval (IR) Systems which are able to meet the needs of the users and, at the same time, provide efficient operation and ease of use. Besides learning about four specific successful IR Systems, I was able to glean a few bits of information which could be of use to us in the development of the Project's IR System, such as the possibility of using both serial and inverted files. At the present time, we are using the serial or sequential approach, but we are in the process of converting to the inverted type of file. However, utilizing both types of files in combination might provide the most efficient retrieval system for the Project.

In a discussion concerning the five problems involved in the operation of an information center (acquisition, indexing, storage, retrieval, and dissemination) it was emphasized that indexing and retrieval are the greatest of these problems, with indexing being the most critical problem area. I would have to agree with this viewpoint, as "output" is so dependent upon "input." Unless the document is properly indexed and classified, it would be quite difficult to retrieve it or information concerning it.

Summary:

The November 13 meetings were concerned with the usefulness of information retrieval systems. It was pointed out that the usefulness of any IR system may be limited by the capability of the information retrieval technology it employs and by the complexity of the procedures required for its use. To achieve an appropriate balance between these limiting factors, usage procedures must be neither so trivial as to fail to make use of the available technology nor so complex as to make the system difficult to use. Similarly, the technology employed must provide the capability to satisfy all reasonable usage requirements and, at the same time, provide efficient operation and ease of use.

Four specific systems were described. Each of these descriptions stressed some of the important characteristics which would be common to large classes of information retrieval systems independent of the content of the data in the file. These systems are described briefly, below.

1. A Discrimination Method for Automatically Classifying Documents

The objective of an indexing technique is to find a set of keywords to represent a document; whereas, the objective of a classification technique is to classify a document into one or more subject headings. A further extension is to connect related subject headings into a tree structure, with classification of incoming documents performed at each level of the structure.

The discrimination method consists of starting with a hierarchical classification structure and a small set of reference documents previously classified into each category by human indexers. All the words are counted in each of the reference documents, and theoretical frequencies for each word type are computed for each category. The most significant words in each group of categories are selected statistically. Each subject can then be represented by the theoretical frequencies of its most significant words. With the theoretical frequencies established, an incoming document can then be classified by comparing the observed frequencies of each word type in the document with the set of frequencies representing each subject. This statistic--which is called the Relevance Value--is computed for the document with respect to each category, thus providing for documents which are relevant to more than one category.

2. The Direct Access Search System

Instead of the usual index organized as either a serial or inverted file, this system includes both types of files. Thus, it offers all of the advantages of both, and permits selection of the best search strategy for each request for information stored in the files. Although for greatest efficiency the system depends on a random access file for direct access to the items to be retrieved, many of the benefits can be realized with tape systems.

3. A Flexible Direct File Approach to Information Retrieval on a Small to Medium Size Computer

The use of this approach to information retrieval was the result of an eighteen months' project undertaken at the John Hopkins University Applied Physics Laboratory by a team consisting of computer people and librarians. Criteria established for this project called for a system that would be simple for the user with output that was easily and fully usable. Some of the project's findings were as follows: (1) Rather sophisticated logical searches can be made on master files or subfiles to yield a readable output containingaa reasonable amount of text; (2) any semantic approach, so long as it is expressed in an intelligible set of symbols may be accommodated; (3) the direct file approach avoids sorting and cross-referencing; (4) a flexible, rather efficient, and economical program now exists for a medium sized conputer for files of limited size.

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4. Experience With A Generalized Information Processing System

This system, called Variable Information Processing (VIP), has been in use at the Naval Ordnance Laboratory, Corona, California, since 1960. It permits the establishment and use of files of many varied and interrelated types of data with a minimum of effort on the part of the user, little effort for system setup, and no effort for computer programing. This processing system consists of a standardized storage technique (magnetic tape) and a battery of processor (machine) routines which can be linked together to perform a wide variety of functions. The key to its generality is the complete variability in length of all information organizational elements.

Information Display Symposium

February 26-27, 1964
San Diego, California

Summary and comments by Donald P. Rucker

SUMMARY

This symposium followed the format of most scientific oriented programs. There was a keynote address by Dr. Ruth Davis of the Department of Defense which emphasized the role that information display devices play in our national defense. Papers (17) were then presented at three separate sessions. The sessions dealt with System Design and Human Factors, Display Equipment and new Techniques and Devices. Many of the papers were accompanied by visuals.

In addition to the presentation of the papers, the sumposium also had an excellent exhibit of information display devices.

COMMENTS

Generally, papers presented at the symposium were highly technical. However, several were of such a level as to permit some comprehension. Papers of this type included "Color in a Flat Tube" by Willard Geer, Vidco Color Corporation, and "A Comparison of Joystick and Helmet Mounted Control Systems for Pursuit Tracking" by Harry Snyder of Autonetics.

The exhibits were highlighted by a Ling-Vought projection system which when tied to a punched tape through a computer permitted the creation of images (alpha, numeric or Live) on the screen. Other interesting displays included a Granger hard copy reproduction of a CRT image through a unique scanning device. Micro-image storage cards by NCR were of interest as was the NCR display device which permits images to remain for various periods of time on the phosphor of a CRT.

All information obtained at the symposium in the form of brochures and handouts which is pertinent to information display has been filed in our equipment file.

SIXTH INSTITUTE ON INFORMATION STORAGE AND RETRIEVAL
February 17-21, 1964
Mayflower Hotel

Summary and comments by Boyd M. Bolvin, Project Librarian

SUMMARY:

The theme of this sixth institute on information storage and retrieval was "Systems Compatibility for Science and Technical Information." The sessions were planned around the following major areas: Requirements and Problems; Programs to Achieve Compatibility; Thesauri, Dictionaries and Word Lists; Indexing Languages and Mechanisms, and Research and Standards.

COMMENTS:

As in most of the conferences and institutes I have attended, papers at this institute presented (read) in the large group sessions with little time for questions and comments and with little or no time for interaction among the participants. I felt it would have been an improvement if the institute had been structured in such a way that there would have been opportunities for gathering in small discussion groups--perhaps after each general session.

Some specifics gathered at the institute:

8 1. The trend in the information field seems to be toward decentralization; toward the development of information networks, with each library or documentation center collecting in depth in a particular area, and with a central agency providing the answers to where particular types of documents are stored.

2. Any information system should be designed to fit the individual needs of its users.

3. Current trends in authority files are toward increased cross-referencing, implicit definitions, and alphabetical arrangement.

4. Present ALA filing rules are impossible--need to be simplified. (I agree!)

5. Links and roles can be quite effective in retrieval; their use can avoid the retrieval of irrelevant documents. (Controversial area)

6. Compatibility--the ability of one information system to accept indexing and terminology of another system for common purposes--can be achieved through coordination of indexing vocabularies and indexing techniques, and through the consistency of this indexing.

7. Systems may need both compatibility and standardization; compatibility may be limited standardization.

8. Authors should provide descriptors or indexing terms for their articles.

9. The "user" of a system can be used to develop the thesaurus or indexing vocabulary for that system.

10. Indexing inconsistencies may be inherent in a system.

11. As the collection grows, there is a need to index more deeply to hold the same specificity of response. More specificity means more terms per document.

12. "The three C's in the IR Systems field are convertibility, compatibility, and cooperation--the greatest of these is cooperation."

VISITATION TO NORWOOD FILMS
March 11-12, 1964
Washington, D.C.

Summary Report by Bernard R. Kantor

Because of the need to obtain certain information relating to distribution of the various films produced by the USOE under Title VII, Part B, a trip to the distributor in Washington, D.C. was indicated. I left on a Tuesday evening and spent all day Wednesday, March 11, 1964 gathering this information. I returned on Thursday, March 12, 1964.

The trip served its purpose well. The information collected will be reflected in the report to the advisory group.

PANACOLOR, INC. MEETING
March 12, 1964
New York City

Summary Report by Donald P. Rucker

The meeting was held at the Biltmore Hotel in New York City on Thursday evening, March 12, 1964. The following persons were in attendance:

ROBERT C. SNIDER, National Education Association
LEON WELLS, Panopix Research, Inc.
HEINZ THIELE, Zeiss-Ikon, A. G.
WALTER TRAUT, Zeiss-Ikon, A. G.
HARRY HARRIS, Panacolor, Inc.
JACK GORDON, Metro-Goldwyn-Mayer
TED CRON, American School and University
JOAN ROSENGREN, Columbia University
KIRK TAYLOR, Panacolor, Inc.
DONALD P. RUCKER, University of Southern California
CHARLES PATTI, Metro-Goldwyn-Mayer
JACK AVERICK, Panacolor, Inc.
MILAN HERZOG, Encyclopedia Britannica Films
MORTIMOR GORDON, Panacolor, Inc.
LOUIS FORSDALE, Columbia University
WILLIAM MAC CALLUM, Modern Talking Picture Services
ADOLPH GRAETZ, Panacolor, Inc.
RUTH WEINSTOCK, Ford Foundation
CHARLES SKINNER, Film Graphics

The meeting was chaired by Dr. Louis Forsdale of Columbia who began the meeting by explaining the many problems currently faced in utilizing the motion picture. He cited such problems as high initial cost of equipment; high cost of maintenance; problems of film distribution and the complexity of projector operation. He indicated that projectors should be of such a nature as to be utilized by small children for educational and recreational purposes. The major contribution to the motion picture field in recent years was made by Technicolor in their Model 800 cartridge projector and by Fairchild in their Mark IV cartridge sound projector, according to Dr. Forsdale.

The group then discussed the cost of motion picture film and it was stated that magnetic sound is only useful as a home movie device. The cost of magnetic film makes it impractical for mass use. Current loop type films which are spliced are showing a tendency to break at the splice after continued use. Loop film breaking inside a cartridge

presents a very serious problem to the user, even more serious than a break in a conventional film.

Dr. Leon Wells, designer of the new projector then explained his creation. It is a self-contained rear view projector which has the capability of projecting from a 12-inch to 19-inch image on its screen. By pressing a button the projector will change to an outside throw and project onto a five foot tripod or wall mounted screen. The unique quality of the device is in the fact that it utilizes a cartridge which contains a continuous 70mm film loop. 8mm or 16mm frames are placed on the 70mm film in rows, and permits a rather large number of frames on a relatively short loop. Random access to any particular frame can be achieved through a searching device called a timer which is built into the machine. This new method of producing film will make ½ hour of color available for $6.50 and ½ hour of black and white film available for $4.50. The cartridge will hold up to two hours of film and the maximum search time from one extreme to another is 45 seconds.

Possible markets for the new projector was discussed and suggestions ran from home use, church use, film rentals, military, industry and education.

Producers of software, such as EBF and Modern Talking Pictures were most enthused about the machine and indicated that they would be willing to have their materials placed on 70mm loops.

Some discussion took place relative to the possibility of giving the projector away or allowing sizable trade-ins in order to get the machine out in the market. The film cartridges, resembling books, would then be the major source of income. The projector itself will be rather inexpensive and some indications were in the $100 bracket. The machine will be produced in West Germany by Zeiss-Ikon. (Mr. Harry Harris of Panacolor indicated to me privately that the machine would be in full production by July of this year.)

Mr. Herzog of EBF indicated that there was a Japanese designed, Chicago produced 8mm cartridge type projector coming up that will be sold on a door-to-door basis, like encyclopedias.

Generalization - Panacolor, Panapix and Zeiss-Ikon will produce this projector and make necessary arrangements for the production of materials on the 70mm film. The marketing will be diversified and will include home, military, industry and education fields.

No literature or photos of the equipment are available at this time.

PANACOLOR AND ZEISS-IKON SIGN CONTRACT
TO PRODUCE NEW AUDIO-VISUAL PROJECTOR

Panacolor, Inc., New York, has signed a contract with Zeiss-Ikon, AG, West Germany, for the production of a new type of audio-visual projector for education, business and home use. The projector is expected to sell for less than one-half the price of currently competing equipment; the unique long-playing film cartridges, in color and sound, will cost less than one-fourth available films.

According to Harry Harris, board chairman and chief executive officer of Panacolor, Inc., production engineering and planning of the projector and cartridges is now underway at Zeiss and Panacolor, and the first production prototype is expected to be available in this country shortly after January 1, 1964.

Panacolor, Inc., was formed six years ago to develop a new process for optically printing both color film and sound tracks on black and white film stock with a significant improvement in quality and at considerably reduced costs. Recently the first feature-length motion picture printed in the new Panacolor film process was released by Warner Bros., and is now being shown throughout the country. Design and development of the new audio-visual equipment has been carried on by Panopix Research, Inc., a wholly-owned subsidiary of Panacolor, Inc.

Zeiss-Ikon AG, Stuttgart, West Germany, is world renowned as a leading producer of cameras, as well as mechanical, optical and electronic scientific and industrial equipment. Zeiss has many plants in Europe, South America and Asia, and has pioneered the development of hundreds of basic scientific, technological and industrial processes that are accepted as standard throughout the world today.

Mr. Harris said that he expects the new audio-visual projector to have the same impact on the film industry as paper-back books have had on publishing. He cited the present high cost of available audio-visual equipment as "prohibitive." Sound projectors (16mm) now sell for $500 and up; 16mm sound film at prices ranging from $75 per half-hour showing for black and white, to a maximum of $300 for color.

Markets

Today, there are approximately 1,500,000 students

taking courses from 450 home study schools in the U.S. Another 200,000 students are taking home study courses from 56 colleges and universities. Teaching by mail and TV is now a $50,000,000 business and is expected to increase five-fold by the end of the decade.

Additionally, there are more than 106,000 elementary and 30,000 high schools in the U.S. Increasing recognition and classification of students into classes paced at a variety of learning speeds indicates that an economical audio-visual set-up would be more effective than the use of closed-circuit television.

Mr. Harris envisions the day when the school library will contain as many audio-visual cartridge "volumes" as present day paper-back books. Students will have the option of viewing these "volumes" on audio-visual units in the school library or on compatible equipment at home.

The home entertainment market also holds considerable opportunity for the new Panacolor audio-visual equipment. Since there are now available over 30,000 subjects from film libraries, and several large companies in the field have indicated considerable interest, Panacolor is now exploring the possibility of a large program to make these pictures available on Panacolor cartridge film.

Another major market includes industrial and commercial films. Sales presentations, service manuals, sales production training--even facilities "brochures"--can be economically made into audio-visual films for showing on this new type of equipment.

Design

According to Dr. Leon Wells, vice president and director of research of Panopix--and the inventor of this new type of equipment--the projector will resemble a portable 19-inch television set with a built-in projector screen. The audio-visual information is contained in a cartridge approximately 7 x 6 x 3 inches, and, in the simple manner of a modern record player, it is merely dropped into and removed from the machine without any threading, re-winding or other time-consuming, difficult and damaging procedures. The cartridge has a two-hour capacity, and because it is book size, can be easily shipped or stored.

In order to satisfy those families that now have standard 8mm motion pictures, the unit has a built-in adaptor for home movies. The machine will also handle both magnetic and optical sound tracks. The Panacolor film cartridges, however, will have optical sound tracks because of the greater economy in the mass production of high fidelity sound. A

4-watt amplifier is built-in to power the loudspeaker. But there is also an adaptor for plugging the unit into an external high fidelity amplifier.

In case the user wants to use this unit for large groups, there is a push button device which allows him to project the image onto a large motion picture screen. The automatic focus control provides for screens of any desirable size in a larger room.

One of the most important features of the unit is the time-control dial. This dial allows the operator to go instantaneously to any part of the "show." For educational review purposes this is extremely valuable. With this control, the unit can be used for locating and showing short bits of audio-visual information anywhere on the film. Since the two hour capacity cartridge can carry, say, about 14 short subjects, up to 8 minutes each, it becomes a "volume set" much as you would find in a library. This feature is as invaluable to the classroom teacher as it is to the home education needs and industrial markets. This same quality makes it invaluable for salesmen who want to show a line of products, or a manufacturer who wants to show his new line of products to a dealer.

For those who wish to view an action in slow-motion, there is a control which allows the film to run at 16 frames per second instead of the standard speed of 24 frames per second. In addition, there is a very slow motion control, 4 frames per second, which allows viewing of a slow motion for a lengthy time. The film will not be damaged on "hold" due to the unique cartridge design and the "cold light" used for projection.

Technical Specifications

A. Projector

1. Small, portable, light-17 pounds.
2. Automatic focusing control for internal and external screens.
3. Volume control
4. Treble and bass controls.
5. Speed control: standard 24 frames/sec., slow motion 16 frames/sec., very slow motion 4 frames/sec.

6. Time control: allows instantaneous locating and showing of any frame in the entire film.

7. Provision for showing standard 8mm films.

8. Provision for handling both magnetic as well as Panacolor optically printed sound tracks.

9. Built-in 4 watt amplifier and loudspeaker.

10. Provision for use of external amplifier.

11. Power requirement: 110 VAC.

B. Film Cartridge

1. Small, easily shipped or stored: 7" x 6" x 3"

2. Up to 2-hour playing capacity.

3. Optically printed sound track with dynamic range, above 40 decibels of at least 5,000 cycles.

3

WESTERN RADIO AND TELEVISION CONFERENCE, 1964
February 26-29, 1964
San Francisco, California

Summary Report by Joseph J. Del Rosso

Speakers

Presentations were made by R. A. Isberg, Charles D. Gibson, Gene Henderson, L. T. Frymire, R. M. Snider, Roger Grimsby, Donald Warden, William Harley, John Crabbe, Harry Ackerman, Robert L. Shayon, John White, Harold Wigren, George Willey, Mrs. A. Scott Bullitt, Ray Hubbard, Gary Steiner, Mort Werner, James Robertson, Nathan Maccoby, Mrs. Elinor Richardson, Lester Beck, and others.

Some Generalizations

Without a doubt this was almost toally a television conference with radio receiving a very tiny bit toward the end of the program.

There were two very stimulating panels, one discussed the willingness, abilities, and guts of broadcasters (commercial mainly) to present truly quality programs; the other raised the questions of why and what causes people to watch certain programs while tuning out others.

Technical presentations were made by members of SMPTE regarding classroom environments, orgination and distribution systems, 2500mc instructional TV Fixed Service (ITFS), etc.

The newest item discussed was the 2500mc ITFS, its technical aspects and its implication for the future.

Some Specifics

1. Gibson: Some general trends in education are (a) toward team teaching, (b) toward change, (c) toward environments and curricula for continuous learning for all, and (d) large group and small group spaces for instruction.

   Five basic factors in building design for quality audio and visual effects are (a) proper size of space, (b) thermal control, (c) visual control, (d) sonic control, (e) aesthetic quality (ranked in order of preference.)

2. Frymire on ETV Channel Allocations: Channels reserved for ETV now - 350; Commercial proposal - 703; NAEB - over 1,000.

   By April, 1964 all channel receivers will be required by law. Educational radio has made a faster growth over the last three years than ETV has during that same period.

3. Robert Shayon: We should have another major network, a government-owned network, to compete with existing ones to provide quality educational and cultural programs.

   Networks continually sacrifice principle for money and expediency.

   Primary task of ETV or a government-owned network is to move men's minds.

4. John White: ETV has accepted piety and mediocrity for spirited creativity and quality production.

   ETV has copied to too great a degree the format and techniques of commercial broadcasting.

5. Gary Steiner: ETV does not reach the low socio-economic, lower educated, lower cultural groups. They do not care to look at it. Big question is how to reach this group.

My Remarks

ETV, like educational radio, is succeeding in reaching the better educated and more culturally sophisticated audiences because ETV content, messages, and values coincide with that group. If ETV is to progress closer to its potential, the rest of society must be induced to view also. We know, however, that the selection of a television program like choosing a book, is based very much on one's level of intelligence, interests, cultural background, experiences, and value system. If this is true, then should the ETV producer lower his standards? Quality? I think not. He can program, however, for a diverse audience and attempt to bring the bottom closer to the top, for there can be no communication if the receiver has no interest, referent, or understanding of the message.

PRESENT STATUS OF THE PROJECT'S INFORMATION STORAGE AND RETRIEVAL SYSTEM

At the present time there are nearly 2,000 documents--pamphlets, research papers and studies, articles and other papers, etc.--stored in the files as well as a collection of over 400 books, 1,000 slides, 500 photographs, numerous clippings, and a fairly complete file of trade literature. This makes a total of approximately 4,000 items, exclusive of the trade literature file and newspaper clippings, stored in the system ready for retrieval. In addition, there is a backlog of nearly 300 items still to be entered into the system. The project's IR system grows at the rate of 12 to 20 items per day, which adds to the backlog. More professional and clerical halp has been needed to adequately process these materials and keep the information system up to date. As a result, a proposal was sent to the Office of Education for assistance in this area.

On April 6, Harold Hickman, Government Contracts Officer for the University of Southern California, notified the ITM Project Office that Supplement No. 2 to our current Project contract had been received by his office, signed by the proper authorities and returned to the U. S. Office of Education.

Supplement No. 2 authorizes the Project to extend the Project Librarian from half time to full time and to provide one additional clerical position to help establish and maintain the information system. This will provide the Project Librarian with enough time to adequately analyze, classify, and catalog the various types of documents and other items which enter the system daily. As with all IR systems, whether they do or do not use computers, the "output" or "retrieval" is so dependent upon the "input" or "indexing and classifying" of the documents. Unless the appropriate terms or descriptors are assigned to the documents, rapid retrieval becomes rather difficult, and, in some cases, nearly impossible.

To date, the Project's IR system has been utilizing the Burroughs Unisort card system for retrieval of documents by subjects or categories. This is an edge-notched card system utilizing needle-sort technique to locate the information in answer to search questions. (In this type of system there is one card per item which is punched in various ways to permit retrieval from several points of view. Retrieval is then accomplished by inserting a "needle-like" tool into the appropriate hole to drop out the cards listing the documents pertinent to the search question. This has sometimes been referred to as "selection by rejection.") However, it is a rather cumbersome and time-consuming activity to enter and especially to retrieve information and as collection grows, rapid retrieval becomes increasingly more difficult as only 300-400 of these cards can be finely sorted by the needle at a time.

With the desire to provide a more efficient and usable information system, a proposal has been sent to the Council of Library Resources in Washington, D. C., requesting a grant for the purpose of obtaining the necessary equipment and supplies for establishing a Termatrex (peek-a-boo) IR System for the Project. This system offers a number of advantages over the present system and should provide for much more rapid retrieval of stored documents. In this system a card is provided for each term or descriptor used to describe the information in a document, rather than a card for each document. In this way, a collection of 10,000 items could be stored on a few hundred cards (depending, of course, upon the number of terms in the indexing thesaurus). This system is user oriented, is easy to keep current, and has almost unlimited flexibility. In addition, it is a fairly low-cost system.

In anticipation of the approval of the proposal by the Council of Library Resources, the Project staff has moved forward with adapting and updating the present collection, to permit and facilitate rapid conversion to the Termatrex System. However, regardless of which system is in use, card catalog is being maintained in order to provide a means of retrieving documents by title and author.

AN ANALYSIS OF THE PUBLICATION PROGRAM OF THE EDUCATIONAL MEDIA BRANCH

by

William H. Allen
ITM Editorial Director

The purpose of this report is to examine the publications program of the Educational Media Branch, evaluate it, and make some recommendations relative to its implementation. Although this activity expands on the designated responsibility of the monograph preparation phase of the ITM Project, it seems desirable to place the monographs within the structure of the entire publications program.

Publications in the Dissemination of Media Research Information

In a report prepared by the writer for the Media Branch on April 11, 1963, it was pointed out that there are five types of dissemination activities which the Media Branch should consider: (1) fact-finding, (2) training, (3) providing services, (4) encouraging application and stimulating education change, and (5) disseminating information. It was also pointed out that there appear to be five target audiences or users of disseminated information: (1) educational administrators, (2) teacher educators, (3) media specialists and researchers, (4) media users in other disciplines, and (5) the general public.

If these five types of activities and five audience groups are organized into a grid, as shown in Table 1, it becomes immediately apparent that publications are the most appropriate means for disseminating information across the board to all users. Yet the fact is that this objective has not been realized. It is the purpose of this paper to suggest some remedies to correct these deficiencies.

Types of Current Media Branch Publications

The publications of the Media Branch may be grouped into four general categories: (1) Monographs, (2) Miscellaneous publications, (3) Service publications and reprints, and (4) final reports of Title VII, Part A projects.

Table 1

PLACE OF PUBLICATIONS IN THE MEDIA PROGRAM

Types of Activities

Audiences	Fact Finding	Training	Providing Services	Stimulating Change	Disseminating Information
Educational Administrators	1. Survey data and statistics on equipment, personnel, use, etc.	1. Visitation list of representative and outstanding media programs. 2. Information about in-service media training programs.	1. Information regarding media programs and publications. 2. Lists of media consultants. 3. Grants and contracts funded.	1. Reports of innovative media programs.	1. Publications of media standards and guidelines. 2. Publications of research generalizations and media developments through professional journals and mass media.
Teacher Educators	1. Survey data and statistics relating to teacher education.	1. Information about pre-service media training programs. 2. Visitation lists.	1. Information regarding media programs and publications. 2. Grants and contracts funded.	1. Reports of innovative teacher education programs in media.	1. Publications of research generalizations and media developments through professional journals and mass media.
Media Specialists and Researchers	1. Survey data and statistics on all aspects of media programs.	1. Information about media training programs. 2. Information about programs for	1. Information regarding media programs, research and publications. 2. Lists of	1. Reports of innovative media programs.	1. Publications of research generalizations in journals and monographs. 2. Publications of media standards and guidelines.

Table 1 (continued)

Types of Activities

Audiences	Fact Finding	Training	Providing Services	Stimulating Change	Disseminating Information
Media Specialists and Researchers (continued)	2. Media research in progress.	training in media research 3. Visitation lists.	media consultants. 3. Grants and contracts funded.		3. Publication of media trends, organization, patterns of use. 4. Publication of research reports. 5. Publication of research abstracts.
Media Users in	1. Survey data and statistics on media applications to specific fields.	1. Information on media training programs. 2. Visitation lists.	1. Information regarding media programs, research and publications. 2. Lists of media consultants. 3. Grants and contracts funded.	1. Reports of innovative media programs.	1. Publications about media characteristics and applications through specialized information channels. 2. Publication of research findings applicable to other disciplines and specializations.
General Public	1. Public opinion of media importance and application.		1. Information regarding media in education.	1. Popular articles about innovative media programs.	1. Popularized articles relating to media uses in classrooms and influence on education.

1. Monographs. A series of monographs is currently being published by the Media Branch (see Appendix A). Of the ten monographs commissioned, only the first three have been published. These monographs range theoretical formulations, through surveys of research, to specifications for equipment. There appears to be no particular rationale for publication as a monograph rather than as a miscellaneous report. The ITM Project will plan and edit approximately ten additional monographs, and these have been defined as being of a "scholarly nature covering a range of subjects in the new media field." In the judgment of the ITM Advisory Panel, these monographs could range from "think" papers expressing the viewpoints of individual researchers and theoreticians to "applied" papers organizing and synthesizing the knowledge in segments of the media field into a form suitable for applications.

2. Miscellaneous publications. These publications cover a range of media topics (see Appendix B). Although they appear in the main to be compilations of media information, reports of conferences, and bibliographies, they also contain titles that meet the monograph definition.

3. 3. Service Publications and Reprints. This category of publication tends to be informational in nature, non-substantive in content, of shorter length, and usually distributed free (see Appendix C). In some cases, the line distinguishing these from Miscellaneous Publications is fuzzy.

4. Title VII, Part A Final Reports. These publications are clearly distinguishable from other Media Branch publications. They are not published by the government but appear in a variety of forms from mimeograph to type-set and are supplied to the Media Branch in the quantity of only 200 quantities to meet the conditions of Part A grants for final reports. The distribution from the Media Branch is to a small select mailing list and to about 70 depository libraries through the Documents Expediting Project of the Library of Congress. They are also made available on microfilm or xerography through University Microfilms and are abstracted in Audio-Visual Communication Review. They are not otherwise available through the Media Branch. To date, about 125 of these reports have been completed.

Problems Affecting the Free Flow of Media Information

Although the Title VII program has been in operation for over five years, information dissemination in publication form has been rather meager; what are the reasons for this condition?

1. Lack of a Dissemination Policy. Although various efforts have been made by the Media Branch staff to develop a conceptual framework into which the dissemination program will fit, the efforts have been handicapped by lack of staff, lack of time, and excessive personnel turnover. The present failure to appoint a Media Branch Director since C. Walter Stone's resignation over 18 months ago has proved to be a serious handicap to the program and the development of policy. Because of the pressures and limitations under which the staff must operate, decisions must be made on a day-to-day basis rather than as part of an overall dissemination policy.

2. Health, Education, and Welfare Department Delay. There appear to be unnecessarily lengthy delays by HEW publications personnel in approving and processing manuscripts. These delays keep vital media information out of the communications channels, and much timely information is allowed to become stale.

3. U. S. Government Printing Office Policies. The U. S. Government Printing Office's policies regarding waivers for printing on the outside is another deterrent to the free flow of media information. When delays occasioned by these policies are added to the delays in the earlier stages of the publication process, the impact of the original manuscript is seriously blunted.

4. Failure to Require Publication. Lack of a positive policy requiring journal publication (or publication in a form assuring wider dissemination of research findings and bibliographical cataloging) limits the diffusion of information from Title VII research grants and contracts. Although most recipients of Title VII grants indicate in their proposals that they will prepare articles for journal publication, few of them actually follow through on this commitment. Failure to enforce this requirement further limits the research information reaching the user.

Importance of Publications in the Transfer of Research Information

Implied in the above discussion is a basic dissatisfaction with the current media publications program. Although Title VII has been directly charged with the responsibility of dissemination of media research information, the published output from the program is just not adequate. It will be helpful to relate this problem to the report of the President's Science Advisory Committee on the responsibilities of the technical community and the government in the transfer of information. This committee concluded:

> "Transfer of information is an inseparable part of research and development. All those concerned with research and development--individual scientists and engineers, industrial and academic research establishments, technical societies, Government agencies--must accept responsibility for the transfer of information in the same degree and spirit that they accept responsibility for research and development itself."[1]

The Committee made two recommendations that have particular pertinence to the publication activities of the Media Branch. They are

> "1. Each Federal agency concerned with science and technology must accept its responsibility for information activities in fields that are relevant to its mission. Each agency must devote an appreciable fraction of its talent and other resources to support of information activities.
>
> "2. To carry out these broad responsibilities each agency should establish a highly placed focal point of responsibility for information activities that is part of the research and development arm, not of some administrative arm, of the agency."[2]

Implicit in the President's Science Advisory Committee report is the notion that the "transfer of information" will occur largely through the medium of publications and the subsequent retrieval of the published information. Thus, a burden is placed on the researcher and agency alike

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[1] The President's Science Advisory Committee. Science, Government, and Information. Washington, D.C.: Superintendent of Documents, U. S. Government Printing Office, 1963, p. 1.

[2] Ibid., p. 4.

to optimize the publication process. In a program such as Educational Media, such mission is written into the words of the legislation. The following recommendations are thus aimed at expediting this information transfer process.

Recommendations for Action

1. Conduct, by the Educational Media Branch, of a study to develop a publications and research dissemination policy, this policy to be formalized in writing and widely circulated to the media research community. The exact procedure to follow is subject to discussion, but the convening of a seminar panel to probe the many facets of the dissemination problem might be indicated. This seminar could be organized by the ITM Project.

2. Implementation of the panel's recommendations by means of contracts with appropriate institutions, organizations, and individuals.

3. In the meantime, the Educational Media Branch should continue its present dissemination policy, using its best judgment as to the course to follow in disseminating research information.

4. Differentiate between "monographs" and "miscellaneous publications" in order to develop a more consistent publication policy.

5. Make clear to contractors and researchers what they might expect in the way of publication by the government or by an outside agency. These organizations and individuals have a right to know in advance whether or not a year or more of effort is going to be made available to the research community (and in what form), whether they will be required to obtain a publisher through their own efforts, or whether the manuscript or report will merely be filed away. It is reasonable to expect that, if a project is worth funding, some decision could also be made relative to the publishability of the results, and this program included in the contract. In a system where hard-copy publication is a tangible benefit to the researcher, he should have more assurance of such publication than the noncommital sentence in the contract: "Contractor will provide six copies, in draft, of the work to be done."

6. Investigate the publication policies of the Department of Health, Education, and Welfare and of the U. S. Government Printing Office with the intent of expediting the free flow of research information.

APPENDIX A

Monographs

1. Charnel Anderson (George Washington University, Washington, D.C.), History of Instructional Technology, I: Technology in American Education, 1650-1900. New Media for Instruction No. 1. National Education Association, Technological Development Project, Occasional Paper No. 1, Los Angeles: School of Education, University of Southern California, 1961 (USOE Title VII, Project No. B-069.)

2. Benjamin C. Duke (International Christian University, Tokyo, Japan). Survey of Educational Media Research in the Far East. New Media for Instruction No. 3. OE-34025, Bulletin 1963, No. 4, Washington, D.C.: U. S. Government Printing Office, 1963.

3. Alfred S. Hayes (Electronic Industries Association). Language Laboratory Facilities. New Media for Instruction No. 4. OE-21024, Bulletin 1963, No. 37. Washington, D.C.: U. S. Government Printing Office, 1963.

4. A. A. Lumsdaine (University of California, Los Angeles). Experimental Research on Educational Media (B-057a). (In preparation).

5. Peter H. Rossi (National Opinion Research Center, University of Chicago), and Bruce J. Biddle (University of Missouri). The Impact of New Communication Media on Education and Technology (B-249). Papers by eight contributors on the social impact of new media, presenting trends in uses and consequences. (In preparation)

6. James Q. Knowlton (Indiana University). A Socio-and Psycho-Linguistic Theory of Pictorial Communication. (B-297). (In preparation).

7. Herbert Schueler (Hunter College) and Gerald S. Lesser (Harvard University). New Media for Teacher Education. (B-304). (In preparation)

8. Wilbur Schramm (Stanford University). Programed Instruction in American Schools: A Look to the Future. (B-322). (In preparation)

9. William H. Allen, (University of Southern California). Readings in Educational Research and Theory (B-236b). (In preparation.

10. Eleanor P. Godfrey (Bureau of Social Science Research). Critical Factors Which Influence Teachers to Use Media. (B-081a). (In preparation)

APPENDIX B

Miscellaneous Publications

1. Educational Television: The Next Ten Years. Prepared by Stanford University. A Report and summary of major studies on the problems and potential of educational television. 1962. Free.

2. Feasibility Study Regarding the Establishment of an Educational Media Research Information Service. Prepared by Columbia University. Report of a study of the need for and feasibility of categorizing, storing, and retrieving educational media research findings on a comprehensive basis. 1960. $3.00 on microfilm; Zerographic copies $10.80 from University Microfilms, Inc., 313 North First Street, Ann Arbor, Michigan.

3. Instructional Materials for Teaching Audiovisual Courses. Prepared by Syracuse University. An annotated list of motion pictures, kinescopes, filmstrips, slide sets, recordings, and tapes. 1961. $.60 from the Audiovisual Center, Syracuse University, Syracuse, New York, 13210.

4. Motion Picture Production Facilities in Selected Colleges and Universities. (OE-55005). Prepared by the University Film Foundation. Report of a survey. 1963. $1.25.

5. The Needs of Education for Television Channel Allocations. (OE-34017). Prepared by the National Association of Educational Broadcasters. Report of a survey designed to bring into focus the national picture of television facilities for education that will be needed during the next decade. 1962. $9.25.

6. The New Media in Education. Prepared by Sacramento State College. A report of the Western Regional Conference on Educational Media Research held at Sacramento, California, April 20-23, 1963. $.50 from Sacramento State College Foundation, Sacramento State College, California, 95801.

7. Newer Educational Media. Prepared by the Pennsylvania State University. Papers of the Regional Research Conference held at The Pennsylvania State University, October 3-5, 1960. $.35 from the Pennsylvania State University, Continuing Education, University Park, Pennsylvania, 17774.

8. New Teaching Aids for the American Classroom. (OE-34020). Prepared by Stanford University. Report of a symposium on the status of research in instructional television and tutorial machines. 1960. $1.25.

9. Planning Schools for New Media. (OE-21021) Prepared by Portland State College. A guide for boards of education, school administrators, and architects in planning school construction to permit effective use of modern media of instruction. 1961. $.50.

10. Programs, '63: A Guide to Programed Instructional Materials. (OE-34015-63). Prepared by the Center for Programed Instruction. A catalog of all programed instructional materials available to educators by September, 1963. $2.50.

11. Teaching Machines and Programed Learning: A Survey of the Industry, 1962. (OE-34019). Prepared by the Technological Development Project of the National Education Association. First published as Occasional Paper No. 3 and reprinted by the U. S. Government Printing Office. $.55.

12. Technology in American Education: 1650-1900 (OE-34018). Prepared by the Technological Development Project of the National Education Association. First published as Occasional Paper No. 1 and reprinted by the U. S. Government Printing Office. 1962. $.25.

13. The Use of Programed Instruction in U. S. Schools. (OE-34022). Prepared by the Center for Programed Instruction. Results of a survey of schools using programed instructional materials during the 1961-62 school year. 1963. $.35.

APPENDIX C

Service Publications and Reprints

Free publications in this listing are available from the U. S. Office of Education, Washington, D.C., 20202. Publications for which a price is listed are available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D.C., 20402, unless otherwise indicated.

1. Criteria for Evaluating Self-Instructional Programs. (OE-34026). By A. A. Lumsdaine. A reprint from the November-December, 1962 issue of School Life. Free.

2. Directory of College Courses in Radio and Television, 1963-64. (OE-34014). A report of basic information on courses in broadcasting education offered in colleges and universities throughout the country. Free. (The revised 1963-63 edition should be available early in 1964.)

3. Directory of 3660 16mm Film Libraries (Bulletin 1959, No. 4). State and city list of institutions and organizations that lend or rent 16mm films. Annotated. 1958. $1.00.

4. Educational AM and FM Radio and Television Stations by State and City. (OE-34016-63). A directory. 1963. Free.

5. Key New Educational Media Personnel. (OE-34003-63). A directory of key personnel in public school and library systems in States and large cities, and in large colleges and universities. 1963. $.35.

6. The New Educational Media Program. (OE-34008). A 6-page folder describing briefly the purpose of Title VII of the National Defense Education Act of 1958, and how it is administered. 1962. Free.

7. Radio and Television: A Selected Bibliography (OE-34004). Annotated and classified bibliography of references. 1960. $.25.

8. Research Abstracts and Analytical Review. Six installments. Prepared by the Department of Audiovisual Instruction of the National Education Association. Quarter compilations of completed Title VII, Part A research projects as they appear in AV Communication Review. Free.

9. Research Grants and Contracts: Programed Learning and Self-Instructional Media. Abstracts of Title VII and Cooperative Research projects in programed instruction. 1963. Free.

10. Sources of Information on New Educational Media. (OE-34024). Prepared by the Educational Media Council. A bibliography. 1963. $.20.

11. Teaching Machines and Programed Instruction: An Annotated Bibliography. (OE-34033). Reprinted from the February, 1963 issue of Audiovisual Instruction, published by the Department of Audiovisual Instruction of the National Education Association. Free.

12. Television in Education. (Bulletin, 1957, No. 21). Background information on the early development of educational television channels and their potential for teaching and learning. 1958. $.65.

13. Title VII New Educational Media News and Reports. Summary descriptions of Part A research grants and Part B dissemination contracts under Title VII of the NDEA. (The first three editions are out of print.) Free.

    Fourth Special Edition (OE-34002-7, July, 1962) contains descriptions of the 36 research projects initiated between June, 1960 and June, 1961.

    Fifth Special Edition (OE-34002-8, February, 1963), describes the 46 dissemination contracts awarded between February, 1961 and July, 1962.

    Sixth Special Edition (OE-34002-9, August, 1963) describes 38 research projects funded during Fiscal Year 1962.

14. U. S. Government Films for Public Educational Use (OE-34006). Descriptive catalog of 5,000 U. S. Government motion pictures and filmstrips available for public use in the U. S. Contains subject index and instructions for borrowing, renting, and purchasing each film. 1960. $2.75.